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21 Nov 1962

MEMORANDUM FOR : Director of Central Intelligence

SUBJECT : OXCART Program Status

1. This memorandum is for your information.

2. The OXCART program status was reviewed with Lockheed and Pratt and Whitney representatives on 14 November. Two aircraft are now in flight test status, one powered by two J-75 engines, the other by one J-75 and one J-58. Approximately 73 flight hours have been accumulated in 64 flights. Included are 13 flights totaling 10 1/2 hours with the J-58 engine. The highest speed reached so far is Mach 2.16 and highest altitude just under 60,000 ft.

3. Each of the camera types, the navigation system, and other components have been installed and functionally checked in low speed flight. In order that significant further progress can be made in the total test program, it is necessary to achieve design speeds and altitudes as soon as possible. Our ability to do this rapidly has been severely compromised by two inter-related problems involving the J-58 engine.

4. These problems are first, the inability of Pratt and Whitney to deliver the minimum necessary number of engines in the next few months; and second, poor engine performance in terms of thrust and fuel consumption at altitude.

5. In regard to engine deliveries we were promised at the end of September by Pratt and Whitney four engines in November and five in December. Now we have been told that only two engines can be expected in each of these two months. Although this means that Pratt and Whitney will have delivered nine engines instead of fourteen by the end of this year, two of the nine engines have been returned to Hartford for significant engineering changes, one other is being held for cannibalizing of parts, and Lockheed is dubious of the use of another for flight test because of uncertainty of the engine control. As of today we have two J-58 flight engines and one with questionable control to support two aircraft now at the test area. One other aircraft has been held from completion at Burbank for lack of engines.

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[redacted] Control System

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6. By the end of this year we will have five airplanes in flight test status. Two of these will have J-75 engines which was decided a year ago when earlier J-58 delivery problems arose. Including the one questionable engine, we will have then the barest minimum number (six) engines for the three airplanes. This provides no spares for flight and no engines to Lockheed for fitting to airplanes to be delivered early next year.

25X1A 7. The principal reason for the engine delivery problem is inability of [redacted] to produce reliable engine controls on schedule. This control is an extremely complex mechanism and must operate in a very high temperature of surrounding air and engine fuel. Although three production controls have passed high temperature acceptance tests, a number of valve and piston seizures have occurred in the past six weeks during tests of other controls. As of now we have acceptable controls for the two November engines, one of which was delivered last week, but do not have controls as yet for the two December engines. Additional engines could be delivered in December if controls were available.

8. The J-58 engine performance deficiencies result from the cumulative effect of a number of engineering changes during the past year when the principal effort in the development program was to achieve operating reliability to insure safety of flight. This has now been and is being demonstrated on ground test facilities simulating high speed and altitude conditions.

9. The following measures have been taken to overcome the problems discussed above:

25X1A 25X1A a. Regarding engine delivery: In September [redacted] plan to procure twice the actual number of parts needed to build each engine control was approved. Control difficulties were then known, but not in the degree now apparent. Hamilton Standard quality control methods are being reviewed and augmented by personnel from Pratt and Whitney. Test procedures and specifications are being reviewed. Valve and piston materials, coatings, and treatments are being examined and modified to prevent seizure. A group of sixteen controls are being completely scrutinized piece by piece for adherence to manufacturing specifications. An untested engine with mock-up control has been sent to Lockheed for fitting to airplanes to be delivered this year to alleviate the need for giving up an operational engine for this purpose.

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b. Regarding engine performance: A revised afterburner has demonstrated improved thrust and full consumption on test engines. Parts for two engines for flight test are being shipped to the test area this week. Reduced cooling airflow to the turbine has also shown improved thrust and fuel consumption on test engines and this change is to be in delivery engine No. 12 and subsequent. By April of next year compressor and burner can modifications and a second revision to the afterburner should be incorporated into flight test engines. These changes have also improved thrust and fuel consumption on ground test engines. I have instructed Lockheed and Pratt and Whitney to supply their best estimates of airplane and engine performance as we know it now and as expected as these changes appear. The importance of reaching design flight conditions has been made known as forcefully as possible so that we can proceed with the entire program. Failure to approximate design performance, at least for limited periods before April, would seriously delay the entire test program.

/s/
HERBERT SCOVILLE, JR.
Deputy Director
(Research)

cc: DDCI

Att: Cable

SIGNATURE RECOMMENDED:

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Eugene P. Kiefer:TAES/OSA:hmj (19 November 1962)

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